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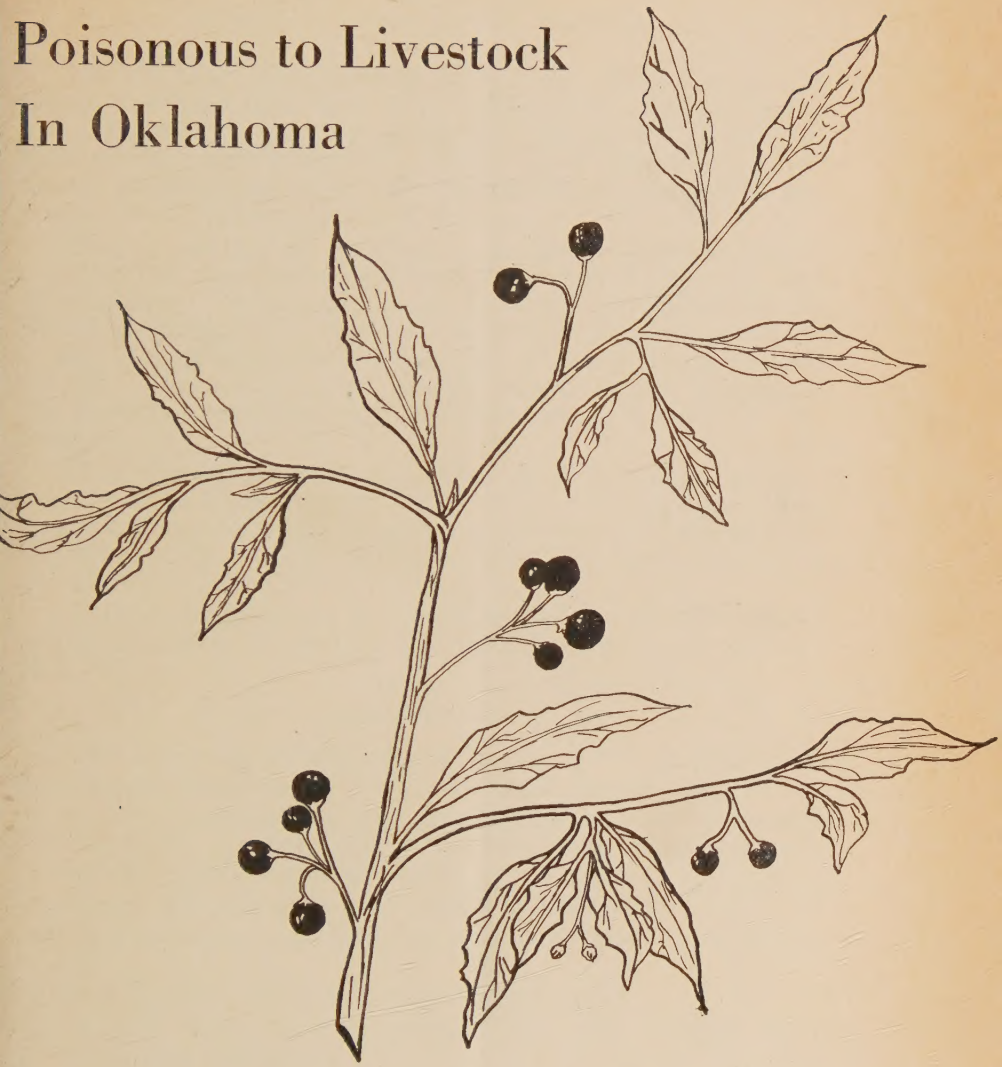
Some Plants Poisonous to Livestock In Oklahoma



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OKLAHOMA AGRICULTURAL EXPERIMENT STATION
Oklahoma A. and M. College, Stillwater

W. L. BLIZZARD, *Director* LOUIS E. HAWKINS, *Vice Director*

Some Plants Poisonous to Livestock in Oklahoma

By H. I. FEATHERLY
Professor of Botany and Plant Pathology

This circular was prepared to meet the demand of county agents, livestock men, and farmers for aid in identifying the more important livestock-poisoning plants of Oklahoma. Each plant is briefly described and in most cases the description is accompanied by a line drawing which shows the important identification marks of the plant.

The prevention of livestock losses from poisonous plants is a difficult and puzzling problem to both the range man and veterinarian. The problem is not as simple as just having the ability to recognize the plant, knowing the symptoms produced in the various kinds of animals, and knowing the prescribed remedy. There are many variable factors which complicate the problem and which, at the present time, are but little understood.

This circular places emphasis on the prevention of poisoning by controlling either the plants or the animals, rather than on prescribing remedies. A general discussion on the poisoning of livestock and the control of poisonous plants concludes the circular.

Further information or advice on stock-poisoning plants will be furnished on request by the Oklahoma A. and M. College.

Control Measures

The following general control measures will be helpful in avoiding livestock losses due to poisonous plants:

1. Prevent poisonous plants from going to seed. This will eliminate annuals within a few years and prevent the spread of perennials by seeds.
2. Fence out poisonous plant areas in the pasture.
3. Mow poisonous plants before turning livestock in on a pasture.
4. Dig up perennial plants and destroy them.
5. Rotate crops where possible. This will control most perennial plants.
6. Keep an ample supply of salt and minerals available to grazing animals.*

* Experiment station animal husbandmen recommend a simple mineral mixture of equal parts (by weight) of powdered limestone, steamed bone meal, and salt. Salt should also be supplied separately when this mixture is used.

7. Be on the alert for poisonous plants of the range and in the pastures.
8. See that animals have ample, wholesome food and that they are not forced to eat questionable plants.
9. Avoid pasturing frost-bitten or drought stricken sorghums.
10. Use good pasture management practices so that animals always have a plentiful supply of forage for grazing.

BLACK NIGHTSHADE, DEADLY NIGHTSHADE

Solanum nigrum L.

This plant is a rather low-growing, much-branched annual with angular stems. The leaves are ovate to lanceolate with wavy-toothed margins. The flowers are white and star-shaped, and are borne in small drooping clusters. Fruits at maturity are black, shiny berries (Fig. 1). Nightshade is usually found in shady, waste places.

Fig. 1.—Black Nightshade, Deadly Nightshade (**Solanum nigrum** L.).

Animals affected: Horses, cattle, sheep, goats, and pigs.
Poisonous part of plant: Leaves and green berries. As the berries reach maturity their poisonous properties seem to disappear.

Most dangerous season: May to October.

Symptoms: Sleepiness and paralysis, salivation, vomiting, bloating and diarrhea.

Remedy: No satisfactory treatment. Remove animal from source of supply.

Prevention: Do not permit the plants to form seed. Keep animals away from it.

BLADDERPOD, COFFEEBEAN WEED, CASTLEBEAN

Glottidium vesicarium (Jacq.) Harper

The bladderpod is a large annual legume, 2 to 12 feet tall, with pinnately compound leaves made up of many small leaflets. The yellow, pea-type flowers are usually borne in pairs in the axils of the leaves. The pods are 2 to 2½ inches long, pointed at each end, and contain two brown or tan colored beans (Fig. 2). The structure of the pod makes the plant easily identified. It consists of grayish-brown outer hull and a thin, white, papery inner hull enclosing the two beans.

The plant is becoming quite common in the southern tier of counties and losses have been reported as far north as Cleveland and Creek counties.

The losses are not so great with cattle that run constantly in a pasture infested with the weed, but mortality runs high among new cattle that are brought in from a bean-free pasture. This is one of the most serious poisonous plants in the State and it is increasing its range steadily.

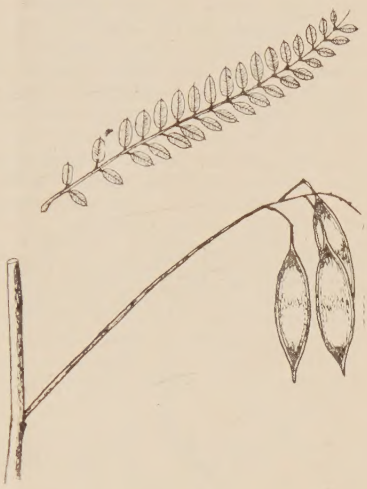

Fig. 2.—Bladderpod, Coffeebean Weed, Castlebean (**Glottidium vesicarium** (Jacq.) Harper) Leaf and winter twig with pods.

Animals affected: Any animal that eats the beans may be poisoned. Most of the losses in the State have been among cattle. At the Oklahoma Agricultural Experiment Station a steer, a rabbit, and some chickens have been killed by feeding on the beans.

Poisonous part of plant: The mature beans.

Most dangerous season: From frost in the fall until about the midlle of March.

Symptoms: Depression, rapid pulse and respiration, muscles trembling, coat rough, diarrhea or constipation, loss of flesh, later, staggering, prostration, inability to rise, death.

Remedy: No satisfactory remedy known.

Prevention: Cut the plants before they form seeds. Do not move animals from a bean-free pasture to one in which there are beans.

ERGOT

Claviceps purpurea (Fr.) Tul.

Ergot* is a fungus disease common to many of the grasses. It is recognized in the field by a long, black, banana-shaped object protruding from the place where the seed should be (Fig. 3). These black objects (sclerotia) will vary in length from about an eighth of an inch to an inch, depending on the species of grass upon which it is growing, the smaller grasses supporting smaller sclerotia.

Ergot is worldwide in its distribution, but only occasionally does it appear abundantly enough to become serious. In 1943, thousands of dollars worth of cattle were lost in the Texas and Oklahoma Panhandles from eating ergot on the wild grasses.

Animals affected: Cattle, horses, sheep, and goats, or any animal that will eat enough of it.

Poisonous part of plant: The black sclerotia which replaces the seed in the head.

Most dangerous season: During and after maturity of the seed. It may be eaten in the field, or in case of threshed cereals the ergot comes out with the grain, and stock may be poisoned by being fed grain that contains it. Hay cut from mature infested grass is often an important source of ergot poisoning.

Symptoms: There are two types of the disease: (1), the spasmodic and (2) the gangrenous. The general symptoms which apply to both types are as follows: Nausea, vomiting, diarrhea or constipation, and abortion by pregnant animals.

The spasmodic type: Over-stimulation of the central nervous system, tonic contraction of the flexor tendons of the limbs, anaes-

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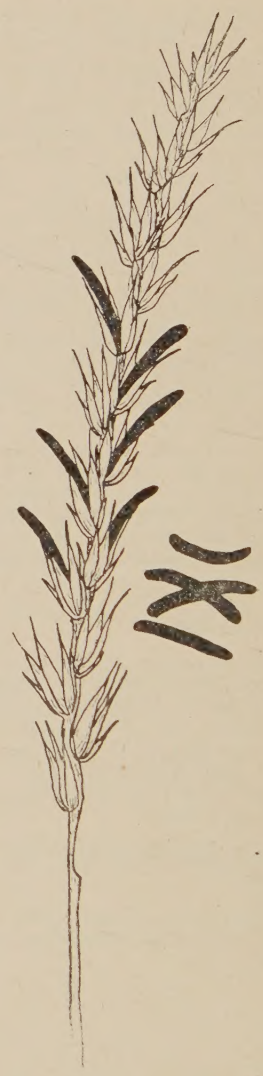

Fig. 3.—Ergot. (**Claviceps purpurea** (Fr.) Tul.)

* See also Okla. Exp. Sta. Mimeographed Circular No. 55, "Ergot."

ERGOT

(Continued from page 6)

thesis of the extremities, muscular trembling, spasms, convulsions, and delirium.

The gangrenous type: Coolness of the extremities, dry gangrene with loss of the hoofs, tips of the ears, tail, hair and teeth. Death is caused by exhaustion.

Remedy: Remove food containing ergot and feed good, wholesome food. Consult a veterinarian.

Prevention: Do not use feed containing ergot. If a severe ergot outbreak can be anticipated, hay should be cut before it heads out. Remove animals from pastures in which there is a dangerous amount of ergot. Sow only pure seed.

COCKLEBUR

Xanthium spp.

Cockleburs are poisonous in the two-leaved, seedling stage (Fig. 4). After the regular leaves appear the plant seems to lose its toxicity. Since the seedling is so short in the two-leaved stage, only animals that can graze closely are able to get them. Thus pigs and goslings seem to suffer most from cockleburs.

Animals affected: Cattle, sheep, swine, goslings, or any animal that can feed on them.

Poisonous part of plant: Germinating seeds, and young seedlings in the two-leaf stage.

Most dangerous season: In spring or whenever the seeds are germinating.

Symptoms: Depression, vomiting, low temperature, spasmodic movements, sickness from a few minutes to several hours.

Remedy: Give milk, castor oil, or raw linseed oil.

Prevention: Do not let cockleburs mature seeds. They are annuals, and may be controlled by preventing them from forming seed for three or four years. Do not pasture land infested with young cocklebur plants. Under no conditions should pigs or goslings be permitted to run on such land.

Fig. 4.—Cocklebur (**Xanthium** spp.)

DEATH CAMAS

Zygadenus nuttallii Gray

Death camas* is quite abundant in certain parts of eastern Oklahoma. In 1922 there was a considerable loss of cattle in the Osage country from eating this plant. It is found in both prairie and open woodland and is easily detected because of its early spring growth. Growth starts from a bulb two or three weeks before the grass in the spring. There first appears a cluster of wide, grass-like leaves which are V-shaped in cross section; later a central stem is sent up about eighteen inches tall with a cluster of greenish-white flowers at the top (Fig. 5). In late spring the plant matures and the above-ground part of the plant dies down.

Animals affected: Horses, cattle, and sheep from eating the leaves, flowers, or seeds.

Poisonous part of plant: Any part of the plant.

Most dangerous season: The spring of the year.

Symptoms: Salivation, nausea, vomiting, low temperature, staggering, weakness, difficult breathing and unconscious condition for hours or days.

Remedy: There is no satisfactory treatment.

Prevention: Remove death camas from pastures. One deep cut with a sharpshooter spade is sufficient to remove the bulb. Do not use grassland with death camas in it for meadow. Keep animals off of pastures until death camas has died down.

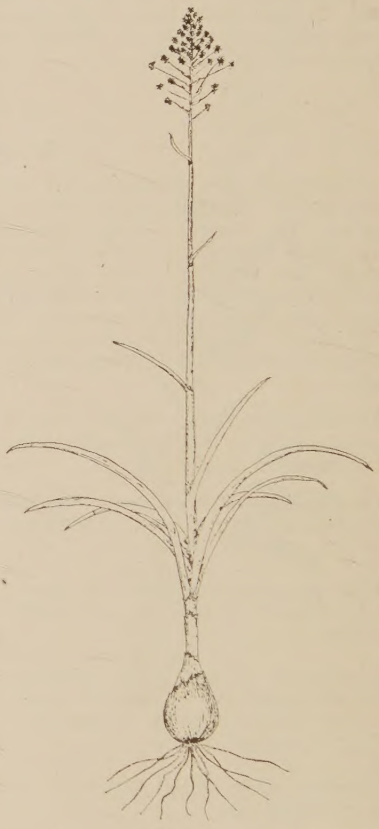

Fig. 5.—Death Camas (**Zygadenus nuttallii** Gray)

* See also U. S. Department of Agriculture Dept Bul. 1376, "Nuttall's Death Camas (*Zygadenus nuttallii* Gray) as a Poisonous Plant."

LARKSPUR

Delphinium spp.

Four species of larkspur are listed as native to Oklahoma, and all of them are more or less poisonous. The most common one is the prairie larkspur (**Delphinium virescens**). It is a perennial from two to three feet tall with palmately dissected leaves. The flowers are white to bluish-white and borne in long, slender racemes (Fig. 6).

The dwarf larkspur (**Delphinium tricorne**) occurs in the shady woodlands of the eastern part of the State. It is shorter and more robust than the prairie larkspur and bears purplish-blue flowers in shorter racemes.

Animals affected: Cattle and horses, rarely sheep.

Poisonous part of plant: The green, succulent parts.

Most dangerous season: Spring and summer.

Symptoms: Loss of appetite, staggering gait and general uneasiness, may fall and lie with legs extended rigidly, nausea, constipation, sometimes bloat.

Remedy: Remove animals from the cause. No satisfactory treatment.

Prevention: Destroy the plants or fence off poisonous plant areas. Crop rotation will control larkspur in farm pastures but it is usually impossible on the range.

Fig. 6.—Larkspur (**Delphinium virescens** Nutt.)

LIMONILLO, BITTER RUBBERWEED

Actinea odorata (DC.) Kuntze

Limonillo is an annual from 8 to 24 inches tall with many stems arising from a crown near the ground. The stems branch near the top and each branch terminates in a head of yellow flowers about one-half to three-quarters of an inch across including the ray flowers (Fig. 7). This plant is found in the western counties of the State, but the only trouble reported has been from the southwestern part where it has caused considerable loss in sheep.

Animals affected: Most of the losses are in sheep, although any animal that will eat enough will become poisoned. The plant is unpalatable and most animals will shun it. In over-used pastures animals may be forced to eat it.

Poisonous part of plant: The aboveground parts of the plant. A sheep that consumes 1.3 percent or more of its weight in green plants may die in a relatively short time, or one that eats a small amount regularly over a long period of time may accumulate enough of the poison to prove fatal.

Most dangerous season: Any time that the plant is abundant enough and the animal eats it. It is poisonous in both the green and the mature dry condition.

Symptoms: Salivation, loss of appetite, nausea, vomiting, depression and weakness, particularly in the hind legs, increased pulse and respiration.

Remedy: There is no remedy for acute cases. Those that are less sick may recover if taken away from the weed and fed good, wholesome food and clean water.

Prevention: Do not let the weed get started in a pasture. If it is already present, mow the pasture to prevent it from reseeding.

Fig. 7.—Limonillo, Bitter Rubberweed (**Actinea odorata** (DC.) Kuntze)

LOCO OR CRAZYWEED

Astragalus, Oxytropis spp.

There are two loco weeds in the State. The wooly loco (**Astragalus mollissimus**) and the stemless loco (**Oxytropis lamberti**). They are deep-rooted perennials with pinnately compound leaves and dense clusters (racemes) of purplish or reddish-purple, pea-type flowers.

The wooly loco usually grows about 12 to 18 inches high from a short stem. The plant is more or less covered with dense, long, white hairs which lie flat against it. The pod is a half to three-quarters of an inch long, grooved above and below and curved upwards.

The stemless loco grows to about the same height as the wooly loco, but is practically stemless, and it is covered with fine, silky appressed hairs (Fig. 8). The pod is deeply grooved on the top and it opens up along this groove.

Loco is unpalatable but certain individual animals may develop an appetite for it and eat it to the exclusion of other plants. They become drug addicts, as it were. Native range animals are less susceptible to loco poisoning than new cattle brought in.

Animals affected: Usually horses but sometimes cattle and sheep.

Poisonous part of plant. The green parts.

Most dangerous season: All seasons, but more especially late spring and early summer.

Symptoms: Depression, loss of weight, weakness, irregular gait, lack of muscular coordination. The optic nerve is affected, making small objects appear large. The horse may leap over small depressions as though they were large ditches or shy violently at imaginary objects. It is near-sighted, difficult to back, and when started forward continues in that direction until it meets an obstruction. Locoed cattle show symptoms similar to those of a locoed horse, while sheep show them in a lesser degree.

Remedy: Remove animals from locoed pasture and feed wholesome food. Call a veterinarian.

Prevention: Loco in a pasture may be killed by cultivation. On the range where this not practicable, it may be necessary to fence animals away from infested areas.

Fig. 8.—Loco, Crazyweed (**Oxytropis lamberti** Pursh.)

SORGHUMS

Sorghum spp.*

Johnsongrass (Fig. 9), Sudan, or any of the grain or sweet sorghums may become serious poisonous plants under certain conditions. There seems to be no danger from the plants as long as they are growing in a thriving condition; but if the plants have been partly killed by frost or stunted by drought, serious results may come from pasturing them.

Some farmers have pastured Johnsongrass for years without loss from poisoning, but it should be pastured with caution when it is in a partly dead condition caused from drought. It should never be pastured if it has been partly frostbitten. Cases of poisoning from eating Johnsongrass or cane hay are rare but have been reported.

Animals affected: Horses, cattle, sheep, or any animal that eats them when they are poisonous.

Poisonous part of plant: The partly dead leaves.

Most dangerous season: During period of drought and after a frost that has partially killed the plant.

Symptoms: The animal becomes uneasy, staggers, falls, convulsions, increased breathing, slobbering, tongue hanging, rolling of the eyes, and general paralysis. Death may result in a few minutes.

Remedy: Call a veterinarian if you have time.

Prevention: Avoid pasturing Johnsongrass, Sudan, and sorghums after frost, or during drought if the leaves are partly dead.

Fig. 9.—Johnsongrass (**Sorghum halepense** (L.) Pers.)

* See also Okla. Exp. Sta. Mimeographed Circular No. 77, "Prussic Acid Poisoning of Livestock"; and U. S. Dept. of Agri. Leaflet No. 88.

WATERHEMLOCK

Cicuta maculata L.

Waterhemlock is a robust plant about three to six feet tall, usually found growing in moist places such as along streams or around ponds or swamps.

It belongs to the carrot family and has the usual carrot type of flower. The leaves are large and doubly compound, which makes them appear somewhat lacy. The stem is stout with purple streaks. The fruits are ovate, somewhat flattened, and about one-eighth of an inch long (Fig. 10).

Animals affected: Any animal that eats it.

Poisonous part of plant: Any part of the plant, but the roots and seeds are most poisonous.

Most dangerous season: May until frost for the above-ground parts, and any time for the roots.

Symptoms: Abdominal pains, kicking, throwing head back, legs extended rigidly, frothing at the mouth, bellowing, groaning and convulsions.

Remedy: No satisfactory treatment. Keep animals as comfortable as possible.

Prevention: Dig out the plants and destroy them.

Fig. 10.—Waterhemlock (**Cicuta maculata** L.)

WHITE SNAKEROOT

Eupatorium urticaefolium Reich.

White snakeroot is a plant of woodlands or shaded areas. It usually grows from two to three feet high with a cluster of small white flowers at the top. The edge of the leaf is saw-toothed and there are three large veins starting from the base of the blade extending upward and outward (Fig. 11).

This plant produces a disease known as "trembles" because of the trembling of the muscles in affected animals. If milk from a cow suffering from "trembles" is used as human food, a disease known as "milksickness" is produced. This is a serious disease and often proves fatal.

Animals affected: Horses, cattle, and sheep; and milksickness in humans.

Poisonous part of plant: The aboveground part of the plant.

Most dangerous season: Spring, summer, and fall, as long as the plant is green.

Symptoms: Trembling of body muscles, inactivity and depression, followed by constipation, vomiting, labored breathing and weakness.

Remedy: There is no satisfactory treatment. Consult a veterinarian.

Prevention: Remove plants from the pasture or change animals to new pasture. If pasture is short, use supplementary feed. Do not use milk from a poisoned animal.

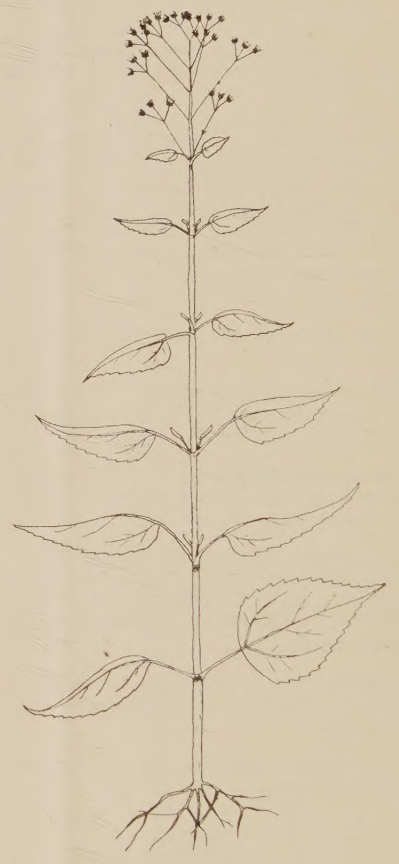

Fig. 11.—White Snakeroot (**Eupatorium urticaefolium** Reich.)

OAK

Quercus spp.

Oaks are poisonous to animals that eat too much of the buds, leaves, acorns, or young shoots. Oak poisoning in Oklahoma occurs principally in the blackjack and shinnery regions of the State. It is usually more prevalent in the spring of the year and particularly during a dry spring. During a dry spring the shallow-rooted grass is slow about starting while the deeper-rooting oaks start at about the same time each year. Animals eager for something green may eat enough oak to poison them. If grass or other food is available to dilute the oak, there may be no ill effects.

Animals affected: Horses, cattle, sheep, goats or any animal that eats too many leaves, buds, shoots, or acorns.

Poisonous part of plant: Leaves, buds, bark and acorns, but most cases of poisoning are caused by eating the young leaves.

Most dangerous season: Any season but more especially spring when the young leaves are just coming out.

Symptoms: Constipation, mucus and bloody feces, emaciation and subnormal temperatures.

Remedy: Remove from source of trouble, feed wholesome foods.

Prevention: Do not use oak pastures in the spring of the year before there is sufficient grass to supply the animals. If there is not sufficient grass, use supplementary feed. Keep salt available to the animals.

General Discussion

All native grass ranges, and many of the farm pastures, have poisonous plants on them. These ranges may be grazed for years with little or no appreciable loss from poisonous plants, then there may come a year when the loss will be heavy. It is difficult to explain why an outbreak of poisoning should occur in that particular year, but the following factors may explain some of the reasons for the annual fluctuations:

1. An animal may not eat enough of the poisonous plant to prove toxic, or it may eat enough other forage to dilute the poison.

2. A plant may be poisonous only at certain stages of its growth. For example, the cocklebur is poisonous only from the time of germination through the two-leaf stage. During this stage it is usually too low for horses and cattle to graze, but is available to pigs and goslings.

3. Some individuals or kinds of animals are more resistant to certain poisons than others. For instance, St. John's wort *(Hypericum* spp.*)* produces a disease known as bighead in white-faced sheep, but does not affect black-faced sheep.

4. Some animals may gradually build up an immunity to certain toxic plants and show no ill effects, while animals suddenly placed in an infested pasture may become poisoned. This is one explanation of poisoning due to bladderpod *(Glottidium vesicarium)*. Most of the losses occur in cattle recently placed in an infested pasture rather than in animals which continually run on it.

5. An animal may develop an appetite for a certain species of poisonous plant and eat it in preference to others. This is sometimes true in the case of Loco weed poisoning. Certain animals in the herd develop a perverted appetite or become "drug addicts."

6. Through scarcity of food, animals may be forced to eat poisonous plants that they would not eat if good food were available.

7. Certain local environmental factors may induce the development of toxic substances in a plant that is not normally poisonous. An outstanding example of this is seen in certain plants growing in selenium soils in which the plants take up enough selenium to make them poisonous to animals which eat them.

8. Changes in climatic cycles may favor or retard the growth of certain poisonous plants, thus increasing or decreasing the total number on a given area over a period of years.

9. Some plants may be more toxic at certain stages in the weather cycle than in others, though little definite information is available on this phase of the problem. Even annual and seasonal variations in the weather may have an influence on the toxicity of the plant.

10. Plant poisoning may be a contributing factor to the death of an animal already affected with another disease or suffering from malnutrition.

11. Weeds just before blooming time often contain more protein than the heavily grazed grasses. Therefore in late summer and fall livestock may graze the weeds to balance their protein requirements.

4/45—7½ M.